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Moeini, Mohammad, Rahrovani, Yasser and Chan, Yolande E (2019) A review of the practical relevance of IS strategy scholarly research. *The Journal of Strategic Information Systems*, 28 (2167). pp. 196-217. ISSN 0963-8687

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A review of the practical relevance of IS strategy scholarly research

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Abstract: While studies suggest that IS strategy is an important topic for practitioners, in-depth explorations of the potential practical relevance of this research area are lacking. In this paper, we develop a multidimensional framework of potential practical relevance and use it to conduct a multimethod descriptive review of 109 IS strategy papers published over the past 10 years in top IS journals. The framework contributes to the IS literature by synthesizing various characteristics that make a paper conducive to being practically relevant. The review highlights how IS strategy research has offered the potential for practical relevance in the past and recommends opportunities to increase this, especially in the digitalization era.

Keywords: Potential Practical Relevance; Descriptive Literature Review; Multimethod; IS Strategy Research; Scholarly Research; Practitioners

DOI: <https://doi.org/10.1016/j.jsis.2018.12.003>

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Introduction

“Are we really content to have our work matter so little in terms of solving the world’s important problems?”

(Bartunek and Rynes, 2010, p. 114)

Concerns about the state of the practical relevance of research are shared across disciplines, and information systems (IS) is no exception (e.g., Benbasat and Zmud, 1999; Gill and Bhattacharjee, 2009; Te’eni et al., 2017). Practical relevance enables researchers to play an adaptive, change agent role in society (Corley and Gioia, 2011) by improving practitioners’ decision-making in organizations (Davis, 2015). Moreover, practical relevance legitimizes research projects, helping researchers to secure support from various stakeholders, including research funding agencies and research participants.

Given that IS strategy (ISS) has been a top concern of practitioners for a long time (Luftman et al., 2015; Luftman and McLean, 2004), ISS research can inform practitioners, for example, in key areas such as strategizing (Peppard et al., 2014), IS planning (Earl, 1993), and IS-business alignment (Karpovsky and Galliers, 2015). However, contemporary information technology (IT) managers and chief information officers (CIOs) generally do not read ISS studies or use the created knowledge products (Teubner, 2007). Therefore, it is important to examine the practical relevance of ISS research and discuss ways of augmenting it.

Indeed, prior research finds “compelling contemporary evidence that IS scholars have always addressed the single most persistent practitioner concern, namely IS strategy” (Straub and Ang, 2011, p. iv), suggesting a high degree of topic fit between research articles and the key concerns of practitioners. However, there are two key gaps in our understanding of the state of relevance this area. First, ISS has been chiefly examined as a homogenous topic (e.g., Taylor et

al., 2010) with only a few studies delving into comparing the state of relevance across core subtopics (e.g., planning vs. alignment) (e.g., Teubner and Mocker, 2008). Second, the practical relevance of ISS research has been mainly examined using the single dimension of topic fit (e.g., Srivastava and Teo, 2005). While topic fit matters, practical relevance has several other dimensions including knowledge dissemination (Gill and Bhattacharjee, 2009; Pearson et al., 2005), which remain underexplored. As these two gaps limit our ability to derive insights that can guide future research, our paper asks: (1) What factors make a research project more conducive to having practical relevance? and (2) What is the state of the practical relevance of core subtopics of ISS research?

To address the first question, we bring conceptual clarity to the notion of practical relevance of research by distinguishing potential practical relevance from (1) perceived research relevance by practitioners, (2) use of research in practice, and (3) realized research impact. We then draw from the relevance literature in IS (e.g., Gill and Bhattacharjee, 2009), management (e.g., Nicolai and Seidl, 2010; Van de Ven and Johnson, 2006), and other disciplines (e.g., Perkmann et al., 2013) to develop a potential practical relevance of research framework with four dimensions of (a) topic selection, (b) knowledge product creation, (c) knowledge product translation, and (d) knowledge product dissemination.

To answer the second research question, we first decompose ISS into four core subtopics (Chen et al., 2010). We then use the developed research framework in a descriptive review (Paré et al., 2015) of 109 ISS articles in five top scholarly IS journals over the past 10 years. In accordance with the scope of the framework, our unit of analysis is the research project, which covers the published articles as well as authors' related intentions (e.g., solving a real-world problem) and actions (e.g., following-up a scholarly article with practitioner-oriented

communications and publications). This motivates a multimethod review, in which we code the articles using multiple indicators for each dimension of the framework and complement the coding data with a bibliometrics analysis and a short survey of authors.

Our contributions are twofold. First, we add to prior studies on the state of practical relevance in IS (e.g., Taylor et al., 2010) and ISS (Teubner and Mocker, 2008) by providing a more detailed and updated analysis. In particular, we find that while ISS research has been successful in selecting relevant topics, it can be further advanced in terms of creating relevant knowledge products and translating them for knowledge end users and disseminators. Second, we contribute to the literature on relevance (e.g., Benbasat and Zmud, 1999; Van de Ven and Johnson, 2006) by delineating potential practical relevance from similar concepts (e.g., perceived relevance) and synthesizing a relevance framework (comprising 17 items in four dimensions). These contributions can help authors, reviewers, and journals better evaluate the state of the potential practical relevance of research and take actions accordingly.

In the next section, we present the boundaries of our research and the potential practical relevance of research framework. We follow this with a description of our research methods. We then present and discuss our findings.

Practical relevance: Key conceptualizations and boundaries

Practical relevance is recognized to have an ambiguous definition (Lee, 1999; Rollier, 2001). To set boundaries for our review of ISS research, this section focuses on increasing the conceptual clarity of relevance in five areas: delineating potential practical relevance from similar concepts, addressing the question of relevance for whom, specifying the level of analysis of relevance, and conceptualizing relevance as a multi-dimensional construct. To do so, we

conducted a brief review of the relevance literature within and outside IS (details in Appendix A).

Delineating potential practical relevance

Our exploration of different definitions of practical relevance revealed four concepts: potential practical relevance, perceived research relevance by practitioners, use of research in practice, and realized research impact (see Fig. 1, also Table A.1 in Appendix A). *Potential practical relevance* refers to “the potential to *improve the decision making* of managers or policymakers” (Toffel, 2016, p. 1495, original emphasis). It is an attribute of a research project and describes its “potential of being useful to practice” (Glass, 2001, p. 8). It is shaped by the characteristics of the research article (e.g., problem framing) as well as other actions and intentions of the authors before and after publishing the article (e.g., delivering knowledge products to practitioners). *Perceived research relevance* refers to the usefulness of a research project’s knowledge products in the eyes of a practitioner (Ben-Menachem, 2001; Denis and Lehoux, 2009; Mohrman et al., 2001). *Use in practice* is concerned with the practitioners’ actual utilization or appropriation of the created knowledge products in their decision-making processes (Nicolai and Seidl, 2010). Finally, *realized research impact* refers to the positive change that practitioners make in the real world by using a certain knowledge product (Gill and Bhattacharjee, 2009; Nunamaker et al., 2017; Rollier, 2001). Potential practical relevance, therefore, is a necessary but not sufficient condition for actualized impact. However, as the primary readers of our paper (i.e., researchers, reviewers, and journal editors) have the most control over improving the potential practical relevance, we focus only on this concept.

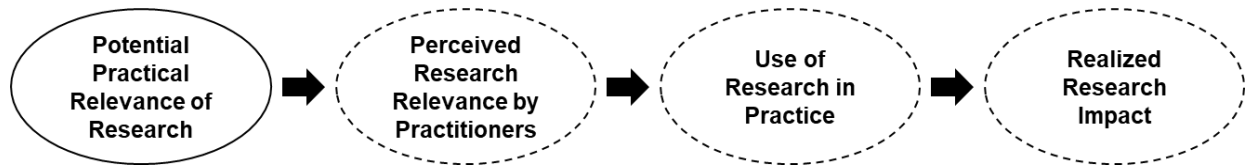


Fig. 1. Delineating potential practical relevance from similar concepts.

Practical relevance for whom?

Scholarly research has various stakeholders (Gill and Bhattacharjee, 2009). Each stakeholder group is likely to perceive relevance in a different way (Khazanchi and Munkvold, 2001). We acknowledge that, “[i]n some ways, we academics ARE practitioners. We practice education” (Rollier, 2001, p. 89, original emphasis). However, for the sake of clarity and simplicity, we categorize key stakeholders into two groups (Dennis, 2001) of academics (e.g., researchers, professors) and practitioners (professionals in companies, governments, nongovernment organizations, students as practitioners-to-be, consultants, etc.).

A multi-level view of practical relevance

Reviewing a certain concept in a research area can entail a multi-level analysis (Merali et al., 2012; Sidorova et al., 2008; Taylor et al., 2010) covering individual articles, core subtopics, and the entire research area. In the practical relevance context, adopting such a multi-level view offers a pragmatic reconciliation of a long-lasting tension regarding whether scholarly research needs to be practically relevant: while each individual article does not necessarily need to have a high potential for practical relevance (Bhattacharjee, 2001; Dennis, 2001), a research area needs to provide a degree of potential practical relevance to fulfill scholars’ societal duties (Davenport and Markus, 1999; Teubner, 2007; Westfall, 1999). Accordingly, while we collect data on the potential practical relevance of the research projects that resulted in the ISS articles that we

review, we focus on analyzing and discussing the aggregated findings at two higher levels: core subtopics and the research area.

To implement this multi-level view, we draw from the ISS mapping framework of Chen et al. (2010, see p. 239) to identify four core ISS subtopics: ISS development process, ISS content which is “the shared view of IS role within the organization” (Chen et al., 2010, p. 239), strategic IS impact, and IS-business alignment, all of which are distinguished from business strategy. While we acknowledge the contributions of other ISS frameworks (Gable, 2010; Karpovsky, 2015; Merali et al., 2012; Renaud et al., 2016), we draw from Chen et al. (2010) as it provides a balanced coverage and parsimony in identifying some core subtopics, which facilitates the organization of our review, and also because it has been used in other reviews of ISS relevance (Teubner and Mocker, 2008). To be inclusive of most scholarly papers on ISS, we use a pluralistic interpretation of the concepts in this framework. For example, we view the articles focusing on the IS strategizing process to be covered by the ISS development concept of the framework.

A focus on scholarly research

Speaking to the rigor-relevance debate (e.g., Robey and Markus, 1998), we focus on the question of how rigorous scholarly research can be potentially relevant (Straub and Ang, 2011). Such research “asks a research question that matters but does not sacrifice rigor in searching for the answer” (Vermeulen, 2005, p. 980). Accordingly, like some prior studies of IS relevance (Srivastava and Teo, 2005; Teubner and Mocker, 2008), we focus on research published in top tier scholarly journals. Nonetheless, we recognize that rigorous scholarly research projects can include submissions to high-quality practitioner-oriented outputs (e.g., published in *SMR*, *HBR*, or *MISQE*) and books aimed at increasing perceived relevance. Therefore, we investigate

whether these outlets have been used as dissemination channels for scholarly research (Straub and Ang, 2011).

Dimensions of potential practical relevance: A framework

Potential practical relevance is concerned with various characteristics of a research project (Ben-Menachem, 2001; Nicolai and Seidl, 2010), thus examining it requires adopting a multidimensional view. To do so, we draw on influential studies of relevance in IS (e.g., Benbasat and Zmud, 1999; Gill and Bhattacharjee, 2009; Schauer, 2007; Straub and Ang, 2011), management (e.g., Nicolai and Seidl, 2010; Van de Ven and Johnson, 2006), and across disciplines (e.g., D'Este and Patel, 2007; Perkmann et al., 2013) to develop a potential practical relevance of research framework (Fig. 2). Our framework presents four key dimensions: potential practical relevance in topic selection, knowledge product creation, knowledge product translation, and knowledge product dissemination.

Dimension 1 – Relevance in topic selection

Potential practical relevance in topic selection refers to attempts to choose a research topic that is valuable for practitioners (Benbasat and Zmud, 1999; Gill and Bhattacharjee, 2009). Key contributing factors to relevant topic selection are ensuring topic fit with practitioners' concerns, topic timeliness, practice-oriented problem framing efforts, authors' practical intent, authors' relevant professional experience, multi-disciplinary co-authorship, and practitioners' involvement in research. These factors are discussed in detail below.

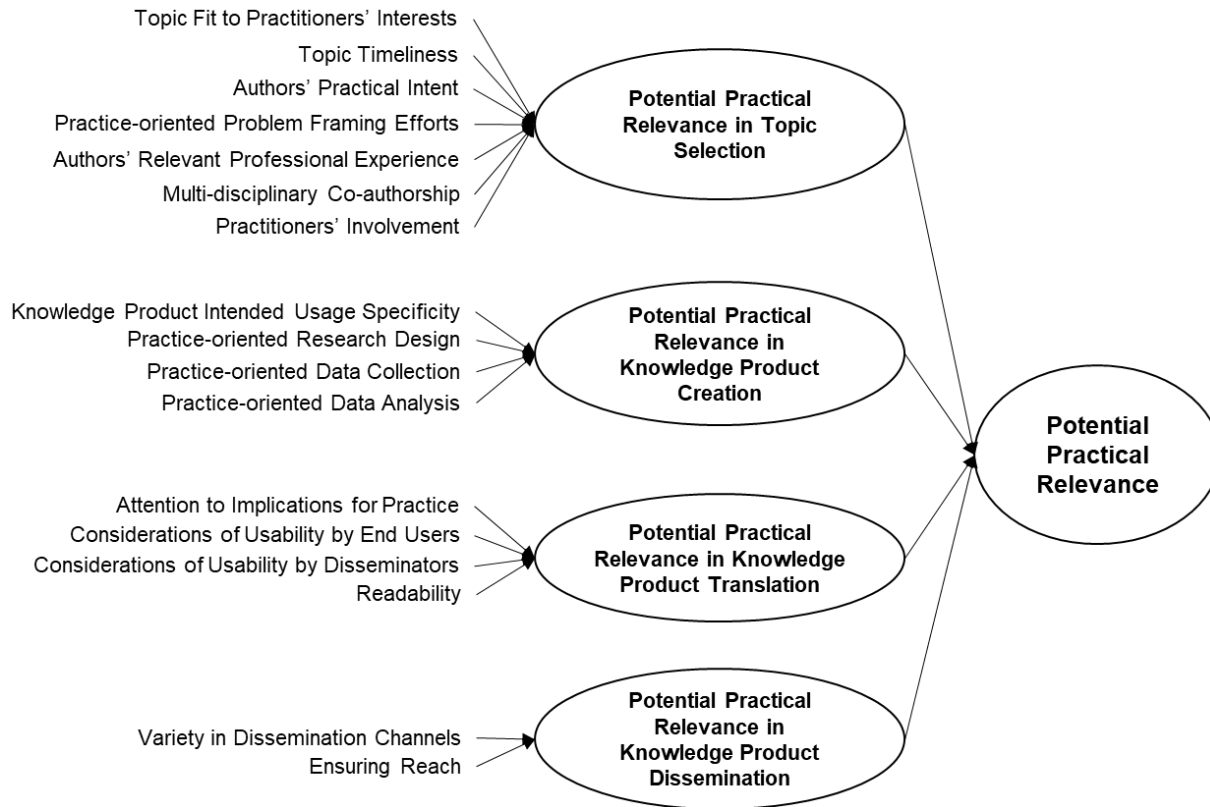


Fig. 2. The potential practical relevance of research framework.

Topic fit refers to the extent to which a project addresses ISS-related problems that fit practitioners’ interests or concerns (Grover and Sabherwal, 1989). Using the notion of research goal relevance, fit is defined as: “the correspondence of outcome (or dependent) variables in a theory to the things the practitioner wishes to influence” (Thomas and Tymon, 1982, p. 347).

Topic timeliness refers to “the requirement that a theory be available to practitioners in time to use it to deal with problems” (Thomas and Tymon, 1982, p. 349). Relevant research is published when one can still use its results (Baskerville and Myers, 2009; Benbasat and Zmud, 1999). As practitioners’ interest in topics can be transient (Cresswell, 2001), timeliness concerns the position of a paper on a topic’s fashion wave—whether it sets a new fashion wave, follows an enduring wave, or addresses an outdated one (Baskerville and Myers, 2009).

Authors' practical intent refers to the extent to which the authors' original motivation behind a research project is to address a real-world problem of practitioners rather than just to fill a gap in the academic literature. In this vein, Alavi and Carlson (1992) suggest that IS studies can be separated by their orientation towards research or practice.

Practice-oriented problem framing refers to the extent of the efforts to frame a research problem as something relevant to practitioners. This is important as “[p]roblem formulation determines the research question that will be answered” (Rai, 2017, p. vii). Management research increasingly calls for research to be problem-driven, i.e., “in some fashion addressing a problem of direct, indirect, or long-linked relevance to practice, rather than narrowly addressing the (theoretical) ‘problem’ of finding the next mediator or moderator variable or filling theoretical gaps simply because they exist” (Corley and Gioia, 2011, p. 22). Likewise, IS researchers have been encouraged to “look to practice to identify research topics and look to the IS literature only after a commitment has been made to a specific topic” (Benbasat and Zmud, 1999, p. 8). In this vein, Paper (2001) calls for rigor in identifying relevant research questions. We discuss three such strategies. *Evidence-based practical problem identification* refers to the extent to which a paper draws on data to support the significance and timeliness of a research problem. For example, the first study in a multi-study paper can conduct primary research to diagnose a problem. Also, a paper may refer to scholarly surveys of practitioners (e.g., Luftman et al., 2015) or draw from published business statistics (e.g., by Forrester, Gartner, or McKinsey). *Citing practitioner-oriented publications to support problem existence* is another such strategy. Another approach is *exemplification*, which refers to whether or not the problem framing uses “common but vivid examples of abstract concepts” (Robey and Markus, 1998, p. 11).

Authors' professional experience denotes the investigators' non-academic experience in the area being examined, for example, from prior work experience or via assuming an industry-related position (Borchers, 2001) such as board membership or consulting. In IS, relevance is suggested to increase when researchers are “exposed to the practical contexts where IT-related usage and management behaviors unfold” (Benbasat and Zmud, 1999, p. 6).

Multi-disciplinary co-authorship refers to whether scholars from different academic disciplines are involved in a research project (Van de Ven and Johnson, 2006). It can increase topic selection relevance as it is “opposed to single-discipline thinking” (Bartunek and Rynes, 2014, p. 1187), and it enables the provision of complementary theoretical understandings of complex phenomena (Peppard et al., 2014; Van de Ven and Johnson, 2006).

Finally, **practitioners' involvement** refers to practitioners' co-authorship and sponsorship activities. *Practitioners' co-authorship* emphasizes engaged scholarship, that is, “a collaborative form of inquiry in which academics and practitioners leverage their different perspectives and competencies to coproduce knowledge about a complex problem or phenomenon” (Van de Ven and Johnson, 2006, p. 803). It contributes to generating relevant research by mixing complementary skills and experiences, and subsequently creating synergy between academics and practitioners (Bartunek and Rynes, 2014). The need for involving practitioners has been emphasized in IS (Kohli, 2001; Peppard et al., 2014). *Practitioners' sponsorship* indicates support by practitioners for a specific research project via mechanisms including competitive research grants from businesses (Gill and Bhattacharjee, 2009), contract research (D'Este and Patel, 2007), and specialized funds from government granting agencies or specialized university research centers supported by practitioners (Robey and Markus, 1998).

Dimension 2 – Relevance in knowledge product creation

Potential relevance in knowledge product creation refers to the extent of efforts aimed at producing a knowledge product with potential usefulness for practitioners. It recognizes that research “is not practical if findings cannot be applied in practice, even if the question under investigation is relevant” (Senn, 1998, p. 28). Key factors contributing to this dimension are knowledge product intended usage specificity, practice-oriented research design, practice-oriented data collection, and practice-oriented data analysis.

Knowledge product intended usage specificity refers to whether the intended usefulness type of the created knowledge product is explicated. Knowledge products have three types of usefulness: instrumental, conceptual, and legitimative (symbolic) (Beyer, 1997; Nicolai and Seidl, 2010). *Instrumental usefulness* “involves applying research results in specific, direct ways” (Beyer, 1997, p. 385) and includes decision making tools (schemes and technological rules), benchmarks, and forecasts. Schemes facilitate defining a decision situation, for example, by listing the viable decision alternatives or as a diagnostic tool. Technological rules or recipes not only usually contain a scheme but also are useful to select the sufficing decision alternative. They provide “frames of reference which are intuitively meaningful to practitioners to organize complex phenomena and to provide contingency approaches to action” (Benbasat and Zmud, 1999, p. 11). McFarlan’s (1984) strategic grid is one such tool in ISS research. Industry benchmarks enable practitioners to compare their positions with their rivals (Nicolai and Seidl, 2010), and forecasts enable informed evaluations of the outcomes of decision alternatives.

Conceptual usefulness “involves using research results for general enlightenment; results influence actions but more indirectly and less specifically than in instrumental use” (Beyer, 1997, p. 385). Such a knowledge product can be a linguistic construct, a new theory (Nicolai and

Seidl, 2010), or a practical conceptual synthesis (Amaravadi, 2001; Benbasat and Zmud, 1999). Linguistic constructs are new constructs (beyond an incremental reconceptualization of a known phenomenon) that “have the potential to change the way we think and communicate about our world and, by extension, about our decision situations” (Nicolai and Seidl, 2010, p. 1267). Theories can uncover unnoticed relationships and processes, which in turn can increase the understanding of decision situations (Nicolai and Seidl, 2010) and reveal contingent actions.

Legitimative (symbolic) usefulness “involves using research results to legitimate and sustain predetermined positions” (Beyer, 1997, p. 385). Research suggests that a knowledge product of legitimative usefulness can be used as a rhetorical device or for credentializing (Nicolai and Seidl, 2010). Using a knowledge product as a *rhetorical device* centers on the idea that “[c]ouching one’s arguments in scientific language often increases the perceived legitimacy of the argument” (Nicolai and Seidl, 2010, p. 1268). Indeed, IS scholars are recommended to “portray the outputs of their research in ways such that it might be utilized by practitioners to justify and rationalize IT-related initiatives” (Benbasat and Zmud, 1999, p. 11). Using a knowledge product for *credentializing* comprises informing the design of new curricula or certificate programs based on the outputs of research (Nicolai and Seidl, 2010).

Practice-oriented research design refers to the extent to which a research project, by design, lends itself to creating practically useful knowledge products. We discuss four aspects of a research design. Adopting a *non-positivist research epistemology* (e.g., interpretivism, pragmatism, or critical realism) considers that a single interpretation of the reality might be inadequate for capturing certain real-world complexities (Bartunek and Rynes, 2014; Truex III, 2001). *Intervention orientation* points to using methods that examine making a change in the world. Some examples are evaluation research (Robey and Markus, 1998), canonical action

research (Davison et al., 2004), design science research (Hevner et al., 2004), action design research (Sein et al., 2011), practice research (Baskerville and Myers, 2009), policy research (Robey and Markus, 1998), and impact research (Gill and Bhattacharjee 2009). Finally, research projects that adopt a *multi-method research* might have a higher chance of being relevant because “[m]ultiple frames of reference are needed to understand complex reality” (Van de Ven and Johnson, 2006, p. 813).

Practice-oriented data collection refers to the extent to which a study’s data collection attempts to capture the complexity of practical issues in the situated context. This can be achieved in three ways. *Interactive data collection* involves the use of methods that require rich communication between researchers and practitioners. This is especially the case with qualitative methods (e.g., using interviews) and action research (Gill and Bhattacharjee, 2009; Truex III, 2001). *Longitudinal data collection* can grasp the evolution and fluctuations of phenomena over time (Van de Ven and Johnson, 2006). *Authors’ context immersion* is the amount of time the investigators spend in the organizational setting under examination. It contributes to potential relevance because “time spent on site is likely to bring the researcher closer to the phenomenon he or she is studying, as well as to increase his or her awareness of the ways in which organizational members are framing the topic or problem under investigation” (Van de Ven and Johnson, 2006, p. 813). Examples include being a participant observer (Baskerville and Myers, 2004), capitalizing on the experience of doctoral students with professional experience (Klein and Rowe, 2008), and taking sabbaticals in practice settings (Gill and Bhattacharjee, 2009).

Practice-oriented data analysis refers to the extent of efforts dedicated to analyzing and interpreting the data in the light of practical considerations. Practitioners are found to perceive research as more useful “if there are opportunities for researchers and members to take each

others' perspectives and to jointly participate in interpreting the results of the research" (Mohrman et al., 2001, p. 357). Accordingly, knowledge production is recommended to be "a recursive dialogue between theorists and reflective practitioners" (Corley and Gioia, 2011, p. 23).

Dimension 3 – Relevance in knowledge product translation

Potential practical relevance in knowledge product translation refers to how well the usability of the created knowledge products is explicated, especially to avoid the risk of being 'lost in translation' (Shapiro et al., 2007). A key factor constituting relevant knowledge translation is attention to implications for practice, while such a discussion can present separate considerations of usability for knowledge end users (e.g., CIOs) and disseminators (e.g., other researchers who teach ISS or provide related consultancy services).

Attention to implications for practice concerns the extent to which a paper dedicates attention to spelling out the usability of its created knowledge products. This can be achieved by *including a standalone "Implications for Practice" section* (Robey and Markus, 1998; Straub and Ang, 2008) and by *increasing the relative length of this section*.

Considerations of knowledge product usability by end users refers to the extent to which a paper explicates how the created knowledge products can be used by practitioners (Mason, 2001). Knowledge translation involves sense-giving, that is, "finding ways to communicate our sense made (i.e., our theoretical contributions) such that those most likely to find our work pragmatically useful (i.e., thoughtful practitioners) understand it and are motivated to apply it" (Corley and Gioia, 2011, p. 26). When translated for immediate application, knowledge products can be implementable by being "prescribed in a manner that could be put to use (to some extent) in practice to exploit an opportunity or to resolve a problem" (Benbasat and

Zmud, 1999, p. 5). Yet when the immediate application of the knowledge product in a study is unclear, “its message must be communicated clearly to whatever stakeholders it claims to impact” (Te’eni et al., 2017, p. 542). Such considerations can be categorized under specifying the target end users, explicating recommended actions, specifying expected outcomes, and adopting a proper tone. *Specifying the target end users* concerns whether a paper focuses on particular groups of practitioners (e.g., CIOs, policy makers) (Bartunek and Rynes, 2010; Gill and Bhattacharjee, 2009) because “[t]o be a real problem, the solution needs to make a difference for an identifiable group” (Westfall, 2001, p. 106). *Explicating recommendations* considers that a clear recommendation offers specific “actions that address problems of what to do in a given domain” (Van de Ven and Johnson, 2006, p. 803). Such actions typically include increasing awareness, learning, conducting training, and (re)designing and (re)structuring (Bartunek and Rynes, 2010). *Specifying expected outcomes* points to explicating the likely consequences of following the recommendations, for example, by distinguishing economic and social outcomes (Bartunek and Rynes, 2010). Finally, *characteristic language* recognizes that recommendations can use a prescriptive (using modal verbs of obligation such as ‘should’ and ‘must’) or tentative (e.g., ‘may’) tone (Bartunek and Rynes, 2010). While a prescriptive tone exhibits confidence in recommended actions, a tentative tone is often more appropriate as the uniqueness of practical situations can curb the generalizability of the findings (Bartunek and Rynes, 2010).

Considerations of usability by disseminators refers to the extent to which a paper explains how its knowledge products can be used by those who further translate and contextualize the findings for end users. It considers that only a very limited proportion of knowledge dissemination to end users occurs directly through scholarly publications (Straub and Ang, 2011) as these publications are generally not read by IS professionals (Alter, 2001; Glass,

2001; Pearson et al., 2005). Two key disseminators are teachers and professional service providers. *Usability for teachers* recognizes that today's students are tomorrow's practitioners (Davenport and Markus, 1999). Accordingly, authors can include an "Implications for Teaching" section (Bartunek and Rynes, 2010) that would explain "how a research study modifies, embellishes, or supports textbook content or classroom pedagogy" (Rynes and Trank, 1999, p. 819). Similarly, *usability for academic professional service providers* considers that some management scholars provide professional consulting and board advising services in addition to their regular duties.

Finally, **readability** refers to stylistic considerations when developing and presenting a knowledge product. Early studies discussing readability focused on increasing readability for practitioners (e.g., Robey and Markus, 1998); however, given the scarcity of direct readership by practitioners (Alter, 2001; Pearson et al., 2005), focus can be shifted to facilitating the readership by key disseminators (Bartunek and Rynes, 2010). A key aspect of readability is simplicity (Gill and Bhattacharjee, 2009), which can be achieved by *shortening papers* (Benbasat and Zmud, 1999; Robey and Markus, 1998), *increasing the use of figures* (Benbasat and Zmud, 1999; Robey and Markus, 1998), *reporting periphery research practices in an appendix* (e.g., instrument validation) (Benbasat and Zmud, 1999; Robey and Markus, 1998; Staub and Ang, 2008), and *using a less scholarly tone* (Benbasat and Zmud, 1999). Moreover, to write an "Implications for Practice" section, Toffel (2016, p. 1496) recommends "vetting drafts of this section with pertinent practitioners," here non-ISS academics.

Dimension 4 – Relevance in knowledge product dissemination

The last dimension of the framework concerns attempts aimed at disseminating the created knowledge products to the right audiences (Gill and Bhattacharjee, 2009). While

dissemination has traditionally been considered a separate step from research (Dennis, 2001), an emerging perspective on relevance considers it to be part of researching. For example, Mode 2 research, widely promoted in the UK, is characterized “as including diffusion of implications for practice based on findings occurring in the process of research” (Bartunek and Rynes, 2014, p. 1187). Early dissemination encourages the authors to interact with their audience, even if they are not using methods such as action research. Dissemination can be attempted using a variety of channels, and reaching the right audience can be verified and ensured.

Variety in dissemination channels involves the diversity of methods employed by authors to disseminate their knowledge products to their intended audiences (Straub and Ang, 2011). Three key channels are direct interaction with practitioners, teaching, and professional service provision. *Direct interaction with practitioners* occurs in various venues such as follow-up publications in practitioner-oriented journals with a wide circulation (Robey and Markus, 1998). It can also involve other outreach activities, i.e., “any effort designed to engage current or potential stakeholders” (Nunamaker et al., 2017, p. 348) such as publications in the business and technology press (Robey and Markus, 1998; Straub and Ang, 2011). *Dissemination via teaching* includes research-led training (Healey, 2005) using the created knowledge products (Davenport and Markus, 1999), writing textbooks, and writing teaching cases (Gill and Bhattacharjee, 2009). Early involvement in teaching activities provides authors with an opportunity to better develop their “Implications for Teaching” sections. *Professional service provision* includes consulting, advice giving, and participation in policy making. Particularly, academic consulting has several benefits: “For the researcher, it offers the opportunity for problem solving and observable impact. For practitioners, it offers access to individuals who are likely to be very bright,

objective, and starved for interesting problems on which to work” (Gill and Bhattacharjee, 2009, p. 230).

Ensuring reach refers to the extent to which the authors track evidence that they are effectively delivering their knowledge products to the right audiences. Reach is a key concern in relevance, especially considering that “IS practitioners [...] do not know where academic research is published” (Pearson et al., 2005, p. 50). Reach can be verified, for example, by collecting and reporting confirmatory evidence describing the practitioner groups interacted with regarding a research project.

In sum, drawing from the practical relevance literature in IS, management, and beyond, we developed a potential practical relevance of research framework with 17 key factors categorized under four dimensions. Using this framework, we reviewed the state of the relevance in a select pool of scholarly ISS research.

Methodology

To examine the state of the relevance of ISS research using the developed framework, we conducted a descriptive review, which aims to “collect, codify, and analyze numeric data that reflect the frequency of the topics, authors or methods found in the extant literature” (Paré et al., 2015, p. 186). This involved five steps (Fig. 3, details in Appendix A¹).

¹ All appendices are available in the online supplement.

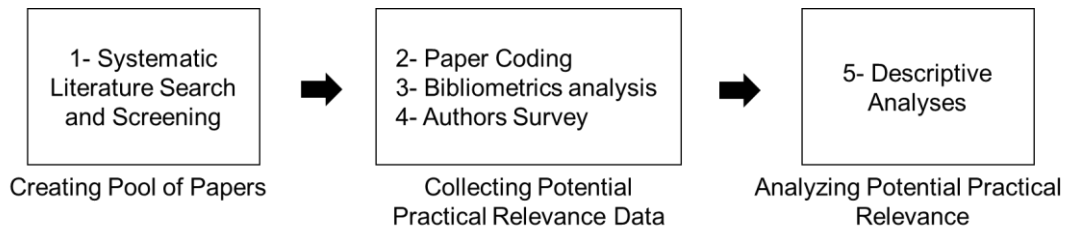


Fig. 3. Key methods steps.

1- Systematic Literature Search and Screening: We created a pool of scholarly papers on ISS by using a review protocol to conduct a systematic literature search (Boell and Cecez-Kecmanovic, 2015). We covered five IS journals including the three appearing in the *Financial Times*’ list of 50 journals (*MISQ*, *ISR*, and *JMIS*), *JSIS* (as a key IS journal focusing on ISS research), and *JIT* (with the second highest two-year impact factor) over the period 2007–2017. After a keyword search, we applied inclusion (e.g., a key focus on ISS) and exclusion (e.g., being an editorial) criteria. This led us to identify 511 and retain 109 papers after screening.

Due to the wide scope of our potential practical relevance of research framework, we employed multiple data collection methods: For those components of our relevance framework that could be assessed by examining the papers, we performed paper coding. To examine the other components of the framework, however, we took the two additional steps of performing a bibliometrics analysis and surveying authors.

2- Paper coding: We evaluated most components of the framework by coding the articles. For example, to examine data-driven problem framing, we built on the approach of Locke and Golden-Biddle (1997) and examined the rhetorical devices authors used to frame their research problems in the “Introduction” sections of their papers. Also, by examining “Discussion” and “Implications for Practice” sections, we investigated the rhetorical devices they used to relate the created knowledge products to their key audiences (Bartunek and Rynes, 2010; Nicolai and Seidl, 2010). A coding scheme was developed, tested, and refined on the first 10

papers. The coding of each framework dimension was then assigned to one of two research assistants, and 10% of each assistant's codes were verified by one of the authors of this paper to ensure quality and agreement. All disagreements were discussed until they were resolved.

3- Bibliometrics analysis: For the codes on topic fit and timeliness, a further bibliometric analysis was performed. To do so, we used the number of practitioner documents about a research topic as a proxy for the level of interest of practitioners in that topic (Baskerville and Myers, 2009). This was implemented using a keyword string created to describe the focus of each paper (see Appendix B3) and searching for relevant practitioner documents in the ProQuest (ABI/Inform Collection) database.

4- Author survey: To obtain complementary data that were difficult (or impossible) to extract from the papers (e.g., authors' original intentions to contribute to practice) or by bibliometrics analysis, we surveyed the authors. On a few occasions, we used the survey as an opportunity to reflect on the agreement of authors' perceptions with our paper coding (e.g., the specification of various knowledge products in papers) and bibliometric analysis (e.g., the timeliness of the paper). Customized surveys were sent to 232 authors. We received 85 responses (37%), corresponding to 53 out of 109 papers (49%). Table 1 provides a breakdown of the coded papers and received responses across core ISS subtopics.

Table 1
Paper coding and survey response distributions across IS strategy subtopics.

Item	Across Core IS Strategy Subtopics				IS Strategy Area
	IS Strategy Development Process	IS Strategy Content	Impact	Alignment	
Papers in the pool of articles, with a primary or secondary focus on the subtopic	15	69	78	31	109
Papers with at least one survey response (percent papers with a response)	8 (53%)	29 (42%)	37 (47%)	15 (48%)	53 (49%)

5- Descriptive analyses: After data collection, we investigated key data distributions, chiefly by visualizing data and performing cross-tabulations using MS Excel. To do so, we

paired data from the paper coding, bibliometrics analysis, and the authors' survey using a unique key. Our descriptive analysis and reporting are at the two levels of the ISS field and its four core subtopics, which were aggregated from the data collected at the individual paper level.

Results

The following sections present the results of our analysis of the pool of papers for each dimension of the potential practical relevance framework across the four ISS core subtopics.

Dimension 1 – Relevance in topic selection

As Fig. 4 illustrates, the nontrivial topic fit scores of the core ISS subtopics (see Appendix B3) suggests that, during the past decade, scholarly ISS literature has examined topics of considerable interest to practitioners. However, the pattern of the research attention to the subtopics does not match that of practitioners' interests. For example, practitioners have relatively high interest in the process of ISS development, which has been studied the least.

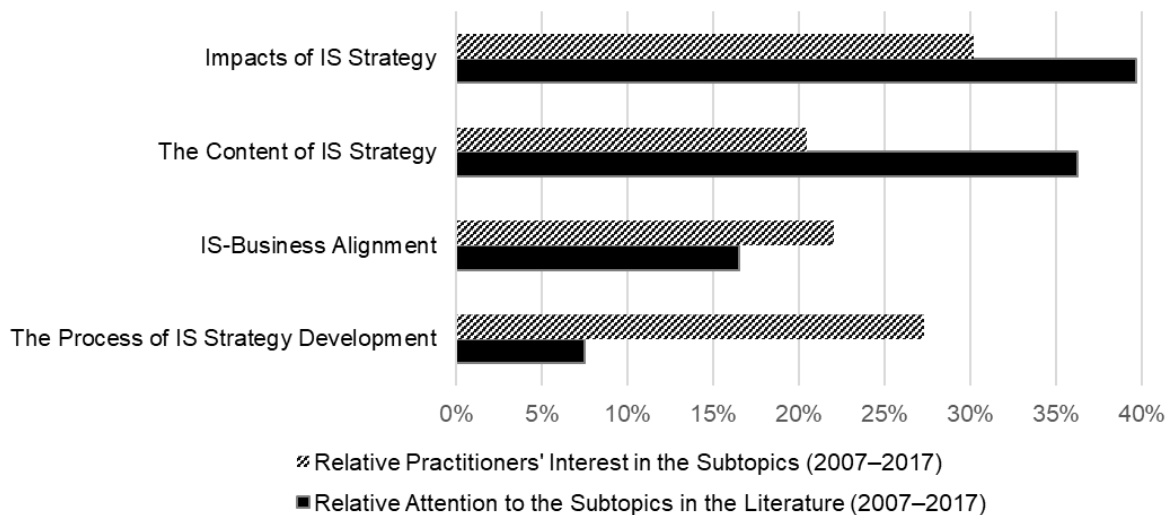


Fig. 4. Relative attention of the academic research and interest of practitioners to IS strategy subtopics.

Moreover, we analyzed the topic timeliness score of each article and, subsequently, each ISS subtopic (details in Appendix B3). We estimated each paper's timeliness by comparing

practitioner interest in the paper's topic after vs. before its publication date. This was determined by subtracting the average annual count of the related practitioner documents from 2000 to the publication date from that count in the publication date to 2018 period. A positive (negative) number means a greater extent of practitioner interest after (before) the publication date. This analysis suggests that most ISS articles study enduring topics (average score = +0.1). By setting the thresholds of 5.8 (one SD above the mean timeliness score) for leading papers (and a similar approach for lagging papers), 9% of the papers were leading and 7% were lagging, and 84% examined enduring topics. This distribution was similar to that of authors' perception of timeliness in that the majority of survey respondents (68%) suggested they had studied an enduring topic. Yet 30% of the authors claimed their research was leading and shaping the interest of practitioners at the time of publication, and one author believed that their paper examined a topic where interest was declining. The paper timeliness scores were then aggregated to each subtopic. On average, the ISS development process subtopic led the practitioners' interest (score = +8.4), but the ISS impact subtopic was slightly lagging (score = -1.1). The ISS content and alignment scores (+0.1 and +0.3) suggested an enduring practitioner interest.

Table 2 presents our examination of other factors contributing to potential relevance in topic selection. The original motivation of authors to conduct their study leaned towards addressing a practical problem; however, the way the research problem was framed in the introduction leaned towards addressing an academic gap. Evidence-based problem identification was infrequent, with only 37% of papers reporting some data about the existence and gravity of a real-world problem. Exemplification was used by 41% of the papers.

Table 2.

Factors contributing to selecting relevant topics.

Dimension	Specific Category	Across Core IS Strategy Subtopics				
		IS Strategy Development Process	IS Strategy Content	Impact	Alignment	IS Strategy Area
Authors' Intent ^a	Addressing a gap in the literature	-	10% (3)	3% (1)	-	6% (3)
	Mostly academic gaps	-	14% (4)	16% (6)	13% (2)	15% (8)
	Balanced attention	50% (4)	45% (13)	46% (17)	33% (5)	38% (20)
	Chiefly real-world problems	13% (1)	21% (6)	14% (5)	20% (3)	19% (10)
	Addressing a real-world problem	38% (3)	10% (3)	22% (8)	33% (5)	23% (12)
Problem Framing in the Paper ^b	Addressing a gap in the literature	47% (7)	32% (22)	35% (27)	29% (9)	35% (38)
	Mostly academic gaps	27% (4)	38% (26)	33% (26)	42% (13)	35% (38)
	Balanced attention	13% (2)	25% (17)	24% (19)	23% (7)	23% (25)
	Chiefly real-world problems	-	4% (3)	4% (3)	3% (1)	4% (4)
	Addressing a real-world problem	13% (2)	1% (1)	4% (3)	3% (1)	4% (4)
Data-driven Problem Identification ^b	Evidenced by primary data	-	3% (2)	3% (2)	3% (1)	2% (2)
	Evidenced by secondary data	40% (6)	33% (23)	33% (26)	48% (15)	35% (38)
Citing Practitioner References to Support Problem Existence ^c	Citing practitioner-oriented papers	50% (3)	69% (22)	70% (26)	57% (8)	66% (33)
	Quoting from practitioners (e.g., CIOs)	-	-	-	7% (1)	2% (1)
Practical Problem Exemplification ^b	By a hypothetical case	-	3% (2)	1% (1)	-	2% (2)
	By an anecdotal story	7% (1)	23% (16)	26% (20)	23% (7)	23% (25)
	By secondary scholarly case data	7% (1)	12% (8)	8% (6)	7% (2)	8% (9)
	By business news, etc.	7% (1)	7% (5)	8% (6)	3% (1)	6% (7)
	By primary case data	-	1% (1)	1% (1)	3% (1)	2% (2)
Authors' Relevant Professional Experience ^a	Very Low	-	-	-	-	-
	Low	25% (2)	7% (2)	11% (4)	13% (2)	9% (5)
	Medium	13% (1)	35% (10)	24% (9)	33% (5)	32% (17)
	High	50% (4)	48% (14)	49% (18)	33% (5)	42% (22)
	Very High	13% (1)	10% (3)	16% (6)	20% (3)	17% (9)
Multi-disciplinary Co-authorship ^b	One or more non-IS co-authors	20% (3)	12% (8)	18% (14)	13% (4)	17% (18)
	Particularly: Strategic Management Faculty	7% (1)	4% (3)	8% (6)	-	6% (6)
Practitioners' Co-authorship ^b	One or more practitioner co-authors	7% (1)	3% (2)	3% (2)	3% (1)	3% (3)
Practitioners' Sponsorship ^b	Companies/Practitioner(s)	13% (2)	3% (2)	9% (7)	13% (4)	7% (8)
	Research funding agencies - General funds	20% (3)	25% (17)	28% (22)	29% (9)	28% (30)
	Research funding agencies - Specific calls	7% (1)	3% (2)	1% (1)	-	3% (3)
	Specialized university research centers	20% (3)	12% (8)	15% (12)	16% (5)	13% (14)

Notes: ^a Reported according to the percentage (number) of survey responses in the category; ^b Reported as the percentage (number) of all papers coded in the category; ^c For pragmatic reasons, this code was examined only in the 2013–2017 period (50 articles).

Exemplification techniques included referring to a well-known company (e.g., Google, Enron Corp.) and using a business news item. Our closer examination of the references used to support the problem framing for the articles in the pool of papers between 2013 and 2017 suggested that 68% of papers cited practitioner references, for example, articles from journals such as *MISQ Executive* and *HBR*. Most authors (58.5%) indicated a high or very high level of professional experience in the studied area, but only 17% of papers had a multi-disciplinary research team. Particularly, 6% of the papers were co-authored by a faculty member in strategic management. Out of 232 authors, three (in three different papers) were non-academic practitioners. Additionally, 8 papers were sponsored by a specific company/practitioner.

Dimension 2 – Relevance in knowledge product creation

As illustrated in Table 3, decision-making tools were the most frequently discussed instrumental product, one paper explicitly discussed an industry benchmark, and one paper offered a forecast. Eight papers argued that they uncovered new phenomena. An explicit presentation of the results as a rhetorical device was rare, and one paper drew from ISS research to discuss business school curricula design. Our coding of the instrumental products and authors' responses agreed for 77% of the papers for which there was a survey response. Likewise, for the existence of new theories, the agreement was 79%; however, for linguistic constructs the agreement was very low (28%). To address this difference, a second round of coding was performed; however, this did not result in any code changes. Linguistic constructs, therefore, might be included in the papers but implicitly and their novelty might not be well-explicated. Similarly, this agreement was low between our coding and authors' responses for legitimative products (32%). Again, a second round of coding did not change the findings. Like linguistic constructs, legitimative knowledge products might be implicit and not be discussed.

Table 3.

Factors contributing to relevance in knowledge product creation.

Dimension	Specific Category	Across Core IS Strategy Subtopics				IS Strategy Area
		IS Strategy Development Process	IS Strategy Content	Impact	Alignment	
Specified Instrumental Usefulness ^a	Presented as decision-making tools	20% (3)	33% (23)	30% (23)	32% (10)	32% (35)
	Technological rules/ recipes	7% (1)	20% (14)	22% (17)	10% (3)	19% (21)
	Schemes	7% (1)	12% (8)	6% (5)	10% (3)	9% (10)
	A diagnostic tool	7% (1)	1% (1)	1% (1)	10% (3)	3% (3)
	A measurement tool	-	-	-	3% (1)	1% (1)
	Presented as a benchmark	-	-	1% (1)	-	1% (1)
	Presented as a forecast	-	-	1% (1)	-	1% (1)
Specified Conceptual Usefulness ^a	Linguistic constructs	7% (1)	9% (6)	9% (7)	7% (2)	7% (8)
	Variance theory	13% (2)	54% (37)	67% (52)	52% (16)	54% (59)
	Process theory	27% (4)	23% (16)	15% (12)	19% (6)	22% (24)
	CAS ^b theory	-	1% (1)	1% (1)	-	1% (1)
	Practical conceptual synthesis	-	1% (1)	1% (1)	-	1% (1)
	Model/framework	13% (2)	6% (4)	4% (3)	13% (4)	6% (7)
Specified Legitimative Usefulness ^a	Offers ways of credentialization	7% (1)	-	-	3% (1)	1% (1)
	Discusses using as rhetorical devices	-	4% (3)	4% (3)	-	3% (3)
Research Epistemology ^a	Interpretivist	67% (10)	38% (26)	30% (23)	36% (11)	37% (40)
	Positivist	20% (3)	57% (39)	67% (52)	61% (19)	58% (63)
	Other	13% (2)	6% (4)	4% (3)	3% (1)	6% (6)
Intervention Orientation ^a	Classifying	57% (8)	32% (21)	24% (18)	33% (10)	31% (32)
	Predicting (P), Explaining (E), or E/P	36% (5)	68% (44)	76% (56)	63% (19)	67% (69)
	Design and/or Action Research	7% (1)	-	-	3% (1)	2% (2)
Multi-method ^a	Yes (e.g., mixed qual. / quant./)	7% (1)	6% (4)	3% (2)	7% (2)	5% (5)
Research Methods ^a	Quantitative Methods	27% (4)	59% (41)	69% (54)	58% (18)	60% (65)
	Bibliometric study	-	-	-	3% (1)	1% (1)
	Computational simulation	-	10% (7)	8% (6)	-	6% (7)
	Event study	-	1% (1)	1% (1)	-	1% (1)
	Meta-analysis	-	-	1% (1)	3% (1)	1% (1)
	Secondary data analysis	7% (1)	22% (15)	22% (17)	7% (2)	17% (19)
	Survey	20% (3)	26% (18)	37% (29)	45% (14)	33% (36)
	Qualitative Methods	67% (10)	39% (27)	27% (21)	42% (13)	36% (39)
	Case - Multiple	13% (2)	12% (8)	5% (4)	19% (6)	12% (13)
	Case - Single	27% (4)	15% (10)	13% (10)	10% (3)	15% (16)
	Discourse analysis	27% (4)	7% (5)	4% (3)	7% (2)	5% (5)
	Semi-structured interviews	-	6% (4)	5% (4)	7% (2)	5% (5)
Interactive Data Collection ^a	Interactive study (e.g., interviews)	40% (6)	31% (22)	23% (18)	36% (11)	31% (34)
Longitudinal ^a	Longitudinal	7% (1)	19% (13)	22% (17)	23% (7)	18% (20)
Context Immersion ^a	Significant time spent the field	20% (3)	9% (6)	6% (5)	13% (4)	8% (9)
Interactive Interpretation ^a	Findings discussed with practitioners	7% (1)	7% (5)	5% (4)	13% (4)	7% (8)

Notes: ^a Reported as the percentage (number) of all papers coded in the category; ^b Complex Adaptive Systems.

Positivism was the dominant epistemology (58%). One paper adopted design research, and another paper implemented action research. Only 5% of the papers used multiple research methodologies (all combined qualitative methods with surveys). 31% of the studies employed interactive methods such as interviews. Cross-sectional data collection dominated the longitudinal approach by a factor of three. Nine studies explicitly discussed the context immersion of the authors (e.g., participant observation), and eight studies reported joint researcher-practitioner data interpretation activities (e.g., via seeking feedback on findings).

Dimension 3 – Relevance in knowledge product translation

As Table 4 illustrates, only 30% of the papers had a dedicated “Implications for Practice” section. Many other papers (48%) merged such implications with their discussion or conclusions. This kind of discussion was scarce in theoretical studies. The dedicated page length for the “Implications for Practice” section averaged 0.63 pages, equal to only 3% of the length of a paper before the “References.” The clarity of the prescriptions in these sections for non-IS academics averaged 3.7 out of 5 ($SD = 0.78$) indicating good clarity. In terms of readability, 62% of the papers used an appendix to expand on their research methods (not applicable to theoretical papers). On average, the papers were 18.5 pages long and had 2.9 figures. Also, 18% of the papers had no figures. Most articles with an implications-for-practice discussion targeted a generic practitioner end user (e.g., managers, leaders) rather than naming a more specific audience category. In 21% of the papers, a decision-making recommendation was offered (e.g., managers should be aware of, pay attention to, recognize, and think about). Prescriptive language outnumbered tentative language by a factor of 10. One paper discussed implications for teaching, and two papers provided recommendations for consulting.

Table 4.

Factors contributing to relevance in knowledge product translation.

Dimension	Value	Across Core IS Strategy Subtopics				IS Strategy Area
		IS Strategy Development Process	IS Strategy Content	Impact	Alignment	
Attention to Implications for Practice ^a	A standalone subsection	-	28% (19)	33% (26)	26% (8)	30% (33)
	Merged with “Discussion” or “Conclusion”	60% (9)	51% (35)	49% (38)	52% (16)	48% (52)
	Average pages dedicated to a standalone “Implications for Practice” section (min, max)	-	0.8 (0.2, 2)	0.6 (0.3, 1.1)	0.6 (0.2, 1)	0.6 (0.2, 2) pages
Specified Target End user ^a	Generic (Organizations, Managers)	20% (3)	32% (22)	37% (29)	39% (12)	36% (39)
	Specific (CIOs, CEOs, clients)	13% (2)	13% (9)	17% (13)	13% (4)	14% (15)
Specified Recommendations for End users ^a	Assess or evaluate a situation	-	7% (5)	6% (5)	-	5% (5)
	Increase awareness	20% (3)	16% (11)	23% (18)	23% (7)	21% (23)
	Learning	-	4% (3)	3% (2)	10% (3)	5% (5)
	(Re)design and (Re)structure	13% (2)	9% (6)	10% (8)	13% (4)	9% (10)
	Offer Training	-	1% (1)	3% (2)	-	2% (2)
Specified Expected Outcomes ^a	Economic	27% (4)	38% (26)	46% (36)	39% (12)	41% (45)
	Social	7% (1)	1% (1)	1% (1)	7% (2)	2% (2)
Characteristic Language ^a	Prescriptive language	33% (5)	42% (29)	50% (39)	42% (13)	46% (50)
	Tentative	-	4% (3)	5% (4)	10% (3)	5% (5)
Recommendations for Disseminators ^a	For teachers	7% (1)	-	-	3% (1)	1% (1)
	For academic professional service providers (e.g., consultants)	-	3% (2)	1% (1)	-	2% (2)
Readability	Average paper length before “References” (min, max)	19.0 (5, 35)	18.4 (6, 33)	18.5 (5, 33)	19.3 (6, 35)	18.5 (5, 35) pages
	Average figures count (min, max)	2.8 (0, 7)	3.0 (0, 14)	3.1 (0, 14)	2.1 (0, 5)	2.9 (0, 14) figures
	Appendix used for method details ^a	9	41	50	22	62.4%
	Average prescription clarity (out of 5) indicating a less scholarly tone	4.4	3.7	3.6	3.6	3.7 / 5

Notes: ^a Reported as the percentage (number) of all papers coded in the category.***Dimension 4 – Relevance in knowledge product dissemination***

Table 5 presents the results of our examination of the factors that contribute to a relevant knowledge product dissemination. Out of 11 examined dissemination channels, the average number used for a single research project was 4.3. One respondent reported performing no dissemination activities, and another reported using 10 channels. Most authors (85%) used the knowledge products they created in papers to inform their own teaching.

Table 5.

Factors contributing to relevant knowledge product dissemination.

Framework Dimension	Survey Indicator	Across Core IS Strategy Subtopics (% Papers)				IS Strategy Area
		IS Strategy Development Process	IS Strategy Content	Impact	Alignment	
Dissemination via Direct Interaction with Practitioners ^a	In a practitioner presentation (e.g., in joint workshops or conferences)	50% (4)	48% (14)	62% (23)	73% (11)	60% (32)
	To perform public speaking engagements	25% (2)	31% (9)	43% (16)	40% (6)	40% (21)
	As the basis for a follow-up publication in academic-practitioner or practitioner journals	25% (2)	48% (14)	54% (20)	40% (6)	45% (24)
	To share insights on social media (e.g., Twitter or LinkedIn) or websites (e.g., blogs)	25% (2)	24% (7)	46% (17)	33% (5)	36% (19)
	In publishing newspaper or magazine articles based on its findings	38% (3)	14% (4)	24% (9)	27% (4)	23% (12)
Dissemination via Teaching ^a	In university or college courses	75% (6)	86% (25)	89% (33)	80% (12)	85% (45)
	In executive, certificate, or corporate training	50% (4)	28% (8)	38% (14)	60% (9)	42% (22)
	To write textbooks and other books	50% (4)	24% (7)	19% (7)	27% (4)	26% (14)
	To write a teaching case	25% (2)	28% (8)	16% (6)	33% (5)	23% (12)
Dissemination via Professional Service Provision ^a	To provide business consultation services or professional advice	50% (4)	31% (9)	41% (15)	20% (3)	38% (20)
	To guide governments in their policy making	13% (1)	14% (4)	16% (6)	20% (3)	13% (7)
Reach to Practitioners ^a	Strongly disagree	-	3% (1)	8% (3)	13% (2)	6% (3)
	Disagree	-	3% (1)	5% (2)	-	4% (2)
	Somewhat disagree	-	14% (4)	8% (3)	20% (3)	11% (6)
	I don't know	13% (1)	48% (14)	27% (10)	-	30% (16)
	Somewhat agree	63% (5)	17% (5)	27% (10)	27% (4)	28% (15)
	Agree	13% (1)	10% (3)	22% (8)	20% (3)	15% (8)
	Strongly agree	13% (1)	3% (1)	3% (1)	20% (3)	6% (3)
Confirmatory Evidence of Reach ^b	Yes - The created knowledge product has been provided to the intended end users	13% (2)	7% (5)	5% (4)	13% (4)	8% (9)

Notes: ^a Reported as the percentage (number) of survey responses in the category; ^b Reported as the percentage (number) of all coded papers in the category

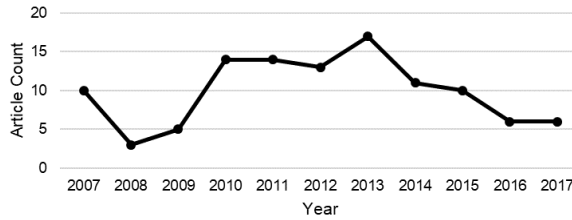
Also, most authors reported that their research had been presented in joint events with practitioners. One in 3 reported using social media to publish their findings. 38% of the respondents indicated that they offered consulting and advice-giving services informed by the findings of their studies. In terms of reach, 30% of the survey respondents did not know if the knowledge product developed in their paper had reached the intended practitioner audience.

Moreover, 8% of the papers reported some confirmatory evidence of such reach, especially by presenting the findings back to the interviewees and seeking their feedback.

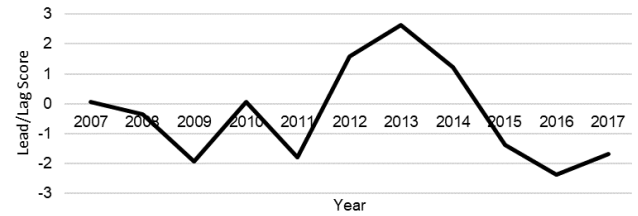
Longitudinal analyses

Fig. 5 illustrates the evolution of practical relevance across several key dimensions. The annual count of scholarly articles on ISS in the selected journals has decreased after a peak in 2013 (Fig. 5a). Likewise, the timeliness of ISS articles (having more practitioner interest after publication date than before) has decreased after a peak between 2012 and 2014 (Fig. 5b). There is no significant pattern in terms of practitioners' interest in ISS topics, especially considering that for 2017, the data should be interpreted with caution as not much time has passed since then as we write (Fig. 5c).

Attention to the implications for practice has been decreasing over the past few years, with only about 0.5 page dedicated to this discussion on average in the past six years (Fig. 5d). Conceptual products have been consistently more frequently produced than instrumental products, and their relative number has remained almost the same over the past few years. There has been a slight increase in terms of conceptual products and a slight decrease in terms of instrumental products. Legitimative products have been very rare (Fig. 5e).

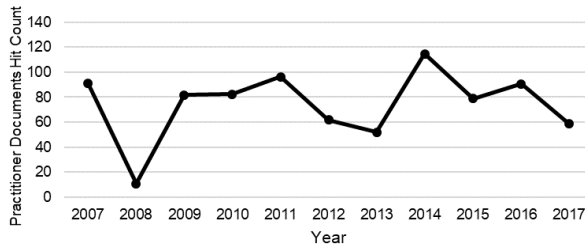


a. Annual count of scholarly articles on IS strategy in the 5 selected journals.

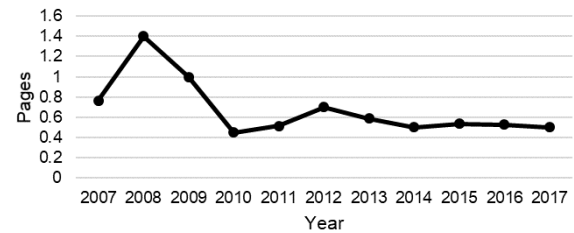


b. Average timeliness

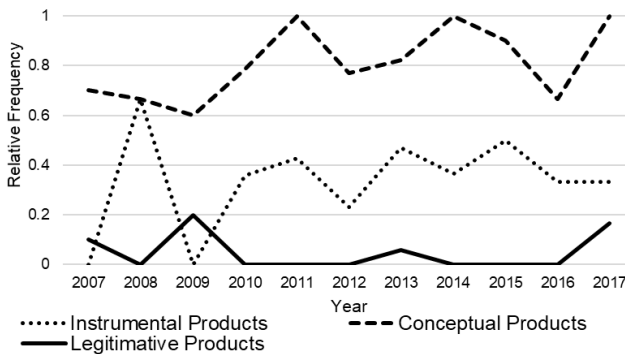
(The lead/lag score is the average annual interest of practitioners after minus before publication date. A positive number shows a lead and a negative number indicates a lag).



c. Average practitioners' interest in IS strategy topics.

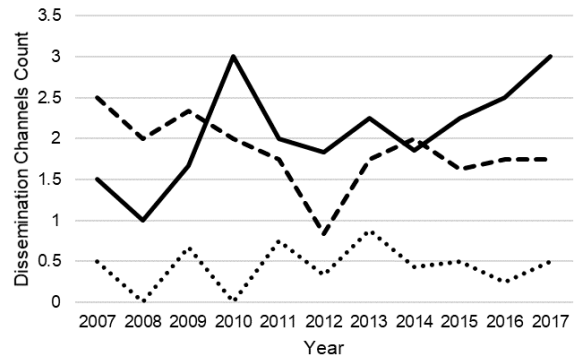


d. Average pages dedicated to implications for practice (When there is such a discussion).

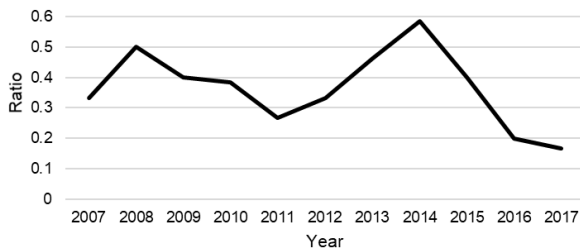


e. Average knowledge products frequency

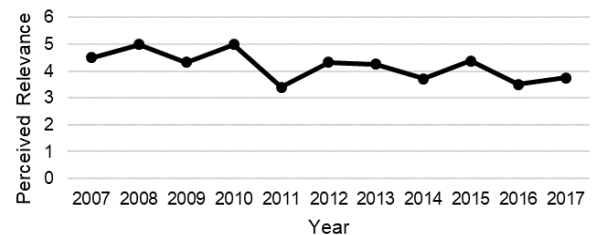
(The relative frequency is the annual number of knowledge products divided by the number of articles).



f. Average of number of dissemination channels used by authors for each article.



g. Ratio of qualitative studies among empirical studies published each year.



h. Authors' perceived practical relevance of their papers. (Very low to very high, 5-point scale)

Fig. 5 Longitudinal analysis of key data.

Knowledge dissemination practices have been increasingly applied by authors over the past three years; in particular, direct knowledge sharing channels have been more frequently used recently (Fig. 5f). The percentage of qualitative studies among empirical studies published each year has been decreasing in the past three years (Fig. 5g). Finally, authors' perceived practical relevance of their articles has been slightly decreasing over time (Fig. 5h).

Discussion

Our study adds to our understanding of research relevance and increases our knowledge of the state of practical relevance of IS strategy (ISS) research. We contribute to the relevance literature by clarifying the concept of relevance. We delineate potential practical relevance from similar concepts such as perceived relevance by practitioners, use in practice, and realized impact. Moreover, our multi-dimensional framework adds to the studies that predominantly adopt a single measure of relevance (i.e., topic fit) by synthesizing four dimensions of potential practical relevance (topic selection, knowledge product creation, knowledge product translation, and knowledge product dissemination). Our unit of analysis was the research project yielding a scholarly publication and led us to include a diversity of factors including project characteristics and authors' intentions/actions. This warranted a multi-method review approach in which coding papers was complemented with a bibliometrics analysis and an author survey.

By applying this framework to a review of 109 ISS papers, we recognize that while a research domain might be strong in one area, it might need further development in other areas. Moreover, by decomposing our findings for the four core ISS subtopics, we show some heterogeneity in the potential practical relevance of this research area. For example, while qualitative studies and interpretivist epistemologies are more popular in the ISS development process core subtopic, impact has been chiefly examined quantitatively.

We also contribute to the relevance literature by arguing that a functional assessment of the potential practical relevance of a research area is multi-level. We consider that offering some practical relevance in the ISS research area is a collective, not necessarily individual-level, responsibility. We thus echo the view that our focus on relevance is not an invitation for all researchers to “immediately shift all efforts away from traditional academic values toward practical relevance. On the other hand, we are saying that our field desperately needs more relevant research than it has today” (Davenport and Markus, 1999, p. 22).

In the remainder of this section, we first discuss our findings in detail to explain their implications for authors, reviewers, and journals. We then draw on our framework to offer an illustrative agenda for increasing the potential practical relevance of ISS research in this digitalization era. Finally, we discuss our implications for practice and teaching, in addition to some limitations of our study which provide avenues for future research.

Implications for authors, reviewers, and journals

Results of our study directly speak to the future activities of authors, reviewers, and journals. *Authors* can use our framework as a guideline towards increasing the potential practical relevance of their research projects. *Reviewers* can act towards developing, not just gatekeeping, the practical relevance of articles. For example, only 28% of the survey respondents indicated that they were asked by the review panel to expand on the implications-for-practice discussion. *Journal editors* have a significant role in encouraging increased potential for practical relevance (Corley and Gioia, 2011). While recent considerations of relevance as very desirable are promising (Rai, 2017), there is room for opening more avenues for augmenting relevance. For example, this can involve calls for futuristic (of course, high-risk) studies that focus on

influencing future ISS practice. Table 6 summarizes our specific recommendations, and the subsections following examine each item in detail.

Dimension 1 – Relevance in topic selection

Researchers have long debated whether relevance is a requirement of scholarly research (e.g. Dennis, 2001; Westfall, 2001). Our survey reveals that practical relevance matters to most ISS researchers as their research motivation leans towards addressing real-world problems. Also, most authors have a strong professional experience in the subject they examine. Yet in acting on these motivations and experiences, research problem framing in the papers focuses chiefly on gap spotting. While this is not surprising for publishing in scholarly journals, journal reviewers can further encourage authors to include recent evidence of the gravity of the examined research problems in the real world. This expectation would encourage not only selecting topics motivated by data but also generating such valuable data, e.g., via conducting primary research.

Our results confirm that while ISS research continues to examine topics of concern for IT practitioners, research attention to ISS subtopics is not proportionate to that of practitioners. We thus provide some support for the argument that “while there is not a perfect alignment between the interests of practitioners and scientists, there is enough critical overlap to argue that IS academics are, in fact, relevant” (Straub and Ang, 2011, p. v). For example, we recommend that authors further examine the process of strategy development (e.g., via the strategy-as-practice and strategizing lenses) as a key topic (Galliers, 2011; Peppard et al., 2014). Strategy-as-practice humanizes the ISS discipline (Whittington, 2014) by considering the agency of practitioners in what they do (Jarzabkowski et al., 2007), and as such it is naturally more conducive to relevance.

Table 6.

Discussion summary and implications for authors, reviewers, and journals.

Framework Dimension	Current Areas of Strength in Terms of Practical Relevance	Opportunities for Improving Potential Practical Relevance	Key Audience		
			Authors	Reviewers	Journals
Dimension 1- Relevance in Topic Selection	Strong intention of the authors to address relevant topics	Better evidencing the real-world gravity of research problems (e.g., using data)	✓	✓	
	High level of the domain expertise of the authors				
	Examining topics of interest for practitioners	A better match of the distribution of the attention in the literature to that of practitioners (e.g., more studies of the IS strategy development process)	✓		✓
	Low rate of lagging research by addressing enduring topics	More breakthrough research (e.g., examination of emerging and impactful application domains than just new theories)	✓		✓
	Some chronologically leading research topics				
Dimension 2- Relevance in Knowledge Product Creation	Some multidisciplinary co-authorship	More collaboration with practitioners (e.g., adopting non-financial ways of collaborating with practitioners such as creating joint learning communities) and faculty from other disciplines (e.g., strategic management)	✓		
	Specified several instrumental products and theories	More legitimated products (e.g., more on credentialization), instrumental products of industry benchmark and forecast types, and conceptual products of linguistic construct and rigorous practical synthesis types	✓	✓	
	High rate of qualitative methods	Paying attention to relevance, in addition to rigor, when designing a study and selecting a method	✓	✓	
	High rate of non-positivist (e.g., interpretivist) research	More intervention-oriented research (e.g., action research), longitudinal research, investigators' context immersion, and joint interpretations of findings	✓		✓
Dimension 3- Relevance in Knowledge Product Translation	Some attention to knowledge product end users in the form of implications for practice	More elaborated explanations of how the created knowledge products could be used, separately addressing the needs of end users and the disseminators (e.g., teachers, consultants). For end users, a better specification of the key audience, more elaboration of social rather than economic impacts, and adopting a tentative rather than a prescriptive tone. For teachers, a provision of how the knowledge product can be used in the classroom	✓	✓	
	Rather clear presentation of prescriptions when one is offered	More attention to the "Implications for Practice" sections (dedicated and longer sections)	✓	✓	✓
Dimension 4- Relevance in Knowledge Product Dissemination	High rate of using research in teaching and consulting	Early teaching using research findings to develop "Implications for Teaching" sections	✓		
	High frequency of practitioner presentations	'Linked publications' (Vermeulen, 2005) (e.g., via the fast-tracked publication of the practitioner-oriented version in an affiliated outlet)	✓		✓
		More textbooks	✓		
		More engagement on social media	✓		✓

Our analysis of topic timeliness offers two insights. First, we find some promising departures from arguments on lagging the interests of practitioners (Glass, 2001). A further ad hoc analysis of those articles with high timeliness scores shows that early papers on some topics such as digital business strategy were published prior to the peak of practitioners' interest in these topics. This finding indicates that ISS research has exhibited thought leadership potential in some areas, although with a caveat that "simple counts cannot reveal the influence of research on the fashion discourse among practitioners" (Baskerville and Myers, 2009, p. 660). Second, we find that most ISS research projects address enduring topics, perhaps as an adaptive strategy to long review cycles (Gill and Bhattacharjee, 2009). Given practitioners' preference for new, non-incremental knowledge (Robey and Markus, 1998), an immediate way of increasing the potential practical relevance is to motivate researchers to examine emerging and impactful theory application domains besides developing new theories.

We found that only a few ISS research projects have been conducted by interdisciplinary teams. Here, journals can intervene by calling for multi-disciplinary collaborations, especially with cognate disciplines. Furthermore, our finding that practitioner co-authorship is scarce is consistent with Gill and Bhattacharjee's (2009) results. Practitioner-funded research is also rare, thus corroborating the observed heterogeneity between IS and other academic disciplines in terms of funding (see Rahmandad and Vakili, 2017, p. 32). Perhaps other ways of collaborating with practitioners can be adopted, for example, by creating joint learning communities (Van de Ven and Johnson, 2006).

Dimension 2 – Relevance in knowledge product creation

Similar to Peppard et al. (2014), we found several explicit presentations of instrumental products in ISS research. However, we found only a few well-explicated industry benchmarks and forecasts, although there are ample opportunities for creating these.

Claims regarding developing new theories are very common, which suggests a healthy and advancing research area. However, we found only a few explicit presentations of a linguistic construct. Alternatively, most studies seemed to make incremental conceptual contributions, which is consistent with our finding that most studies focused on examining enduring but not new topics. Similarly, we found only a few explicit mentions of how managers can use research findings in a symbolic way to legitimize their decisions. For example, Mithas et al. (2017, p. 440) state: “Based on these findings, managers can use IT-enabled globalization capabilities to justify IT expenditures.” Further, with the exception of Dhar and Sundararajan (2007), we found a clear lack of articles with ISS curricula development implications.

We encourage authors to consider all types of knowledge products when identifying a research problem. Indeed, overemphasizing instrumental products “may lead to focusing on shallow and short-sighted questions of performance improvement instead of addressing larger questions and fundamental issues” (Van de Ven and Johnson, 2006, p. 807). Likewise, journals and reviewers need to remain open to all types of knowledge products, e.g., they can call for more practical research syntheses (e.g., Lacity et al., 2009). Reviewers can ask for an explicit discussion of any possible knowledge products and examine whether the knowledge products offered in a paper are indeed suitable for addressing the particular real-world problems motivating the paper’s research questions.

The reviewed ISS literature incorporated a variety of research methods conducive to practical relevance. We found several qualitative studies, which offer “motivation, inspiration, and illustration” by convincing the audience about the importance of a new phenomenon or how it unfolds (Siggelkow, 2007, p. 20). We also found several interpretivist studies, situating problems in their contexts. However, more consideration of methods may be required to increase relevance. For example, action research, which “certainly meets our criteria for being both rigorous and relevant” (Robey and Markus, 1998, p. 15), is rare. To encourage the use of such methods, journals can intervene, for example, by establishing portfolio targets (Gill and Bhattacharjee, 2009).

Regardless of the adopted method, two research design considerations can increase the potential practical relevance of ISS research. First, as ISS is a long-term phenomenon, more longitudinal studies can be required. For example, alignment has a temporal dimension (Chan and Reich, 2007; Reynolds and Yetton, 2015), and some strategies emerge (Jenkin and Chan, 2010). Similarly, further qualitative examinations of the micro processes of IS strategizing (Karpovsky and Galliers, 2015) can be performed by investigators’ context immersion via shadowing related meetings. Second, as research findings can often be interpreted in alternative ways, an increased expectation to see joint academic-practitioner data interpretation is justified (see a sample agenda in Mohrman et al., 2001, p. 362).

Two caveats are noteworthy. First, while we emphasize field-level provision of potential practical relevance, we argue that rigor must stay a substantive aspect of academic research, although its presentation could be on a need-to-know basis (Hodgkinson et al., 2001). This way, key audiences, including IS academics of different specializations who are likely to read the paper and use it for teaching and practice, can have a better readership experience (Alter, 2001).

Second, we do not argue for selecting research methods merely based on their potential contribution to relevance, as epistemological rigidity is dysfunctional. Rather, we echo the view that “[t]he degree of methodological sophistication of a research project should be determined far more than it is at present by the needs of the users of research” (Hodgkinson et al., 2001, p. S45). Accordingly, one can ask, *ceteris paribus*, whether a chosen method is the best choice to create intended knowledge products that can help practitioners with their real-world problems.

Dimension 3 – Relevance in knowledge product translation

We find that, although the IS strategy literature offers a wealth of knowledge products, and despite the calls for clear discussion of implications for practice (e.g., Straub and Ang, 2008), attention to the “Implications for Practice” section is quite limited. Such sections are very short and are often implicit in the “Discussion” section. Reviewers and journals can seek more elaborated and standalone “Implications for practice” sections.

Our study unveils significant usability issues for both practitioner end users and knowledge disseminators. For practitioner end users, first, a more careful segmentation of practitioners (e.g., CxOs, IS department managers) and decomposition of the implications for them is needed to promote research usability. Second, while one of the most common knowledge products was instrumental, the most common prescription was “to be aware of” a certain phenomenon, which pertains to carving out conceptual products from the findings. Authors can include a detailed explanation of how an instrumental product can be used (e.g., by giving an example). In doing so, as practitioners appropriate (Beyer, 1997) and mix (Beyer and Trice, 1982) various knowledge products when using them, researchers can present various affordances of their research. For knowledge product disseminators, our key premise is that most readers include academic colleagues (Alter, 2001) and consultants. Yet discussions targeted to teachers

and consultants are rare. Addressing these audiences is a pragmatic solution that targets liaison roles in-between academic journals and practitioners. Again, here journals and reviewers can intervene, for example, by seeking “Implications for Teaching” sections.

Dimension 4 – Relevance in knowledge product dissemination

One promising finding is that most ISS authors use their research in their teaching, especially for executive, certificate, or corporate training. While this supports the argument that teaching is a key dissemination channel for IS researchers (Olfman, 2001), it marks a departure from the argument that “we consistently send signals that our research is irrelevant to practice by keeping it away from the professional students we serve” (Robey and Markus, 1998, p. 8).

We also find that often early drafts of ISS papers are presented at events practitioners attend. In such presentations, researchers can focus on the implications for practice and seek feedback whereby “academic writers might discover new potential value in what they have found or, alternatively, begin to address some concerns that practitioners might have about its applicability” (Bartunek and Rynes, 2010, p. 112). This would be an example of joint data interpretation efforts discussed above (Mohrman et al., 2001). To further motivate this, reviewers can begin to seek some rigor in developing the implications of a research piece for practice.

Authors are invited to disseminate their findings, considering the need for “a commitment to the diffusion of knowledge beyond the academic domain and into practitioner domains” (Knights and Scarbrough, 2010, p. 1289). First, more papers can be followed up by practitioner-oriented publications (Sein, 2001). Journals can further incentivize this practice by enabling linked publications (Vermeulen, 2005), for example, by fast-tracking publication in an affiliated practitioner-oriented outlet. Second, the low level of social media use, which corroborates the general observations by Kristof (2014), can be addressed by promoting this practice especially

when training doctoral students (Gill and Bhattacharjee, 2009). Third, our study showed that most authors are not aware of whether their knowledge products have reached the intended practitioner end users. Yet authors can collect confirmatory evidence of the availability of knowledge products to the target audience (Hodgkinson and Rousseau 2009). To incentivize this, journals can consider a new publication genre, called impact case studies (as practiced by UK Research and Innovation – UKRI), in which the authors of a published paper present a short article in the same journal to reflect on their research reach, use, and impact (Pfeffer, 2007).

The evolution of potential practical relevance over time

Our longitudinal examination of the practical relevance of ISS research reveals mixed progress across the dimensions of our relevance framework. First, our analysis reveals that researchers' direct interaction with practitioners is increasing, despite some fluctuations. Surprisingly, however, such direct interaction is resulting from joint events with practitioners but not using social media. Second, there is a consistent and significant gap over time between conceptual products and instrumental/legitimative ones. This can be partially addressed by increasing awareness of various knowledge product types (e.g., legitimative products) among academics. Finally, our longitudinal analysis indicates a decline in some aspects of relevance over the past few years. For instance, the number of pages dedicated to practical implications shrank from about 1.5 pages in 2008 to 0.5 page in 2017. Similarly, although qualitative methods are highly conducive to producing relevant findings (Whittington, 2014), the ratio of qualitative among empirical studies has declined from 0.6 in 2015 to 0.2 in 2016. Journals and reviewers can address these trends.

Looking forward: Relevant ISS research in the digitalization era

Above, we discussed the implications of our research for conducting ISS research that has a high practical relevance potential. To further illustrate possible opportunities for such research, we discuss investigating an important phenomenon, digitalization, across all four dimensions of our framework in an ISS context. Our list of ideas below is not intended to be exhaustive, yet hopefully it provides illustrative starting points and inspires researchers to use the framework in a similar manner for other phenomena.

Dimension 1 – Digitalization and Topic Selection: The digitalization era provides ample opportunities for examining each ISS core subtopic. In terms of ISS development process, given the practitioners' interest in digital business strategy (Bharadwaj et al., 2013) and strategizing (Galliers, 2011), further research can build on the cross-section of these two topics by focusing on the micro decisions and processes (Peppard et al., 2014) that organizations use to form their digital strategy. One example is further examining the rhetorical practices in organizational social media networks (Huang et al., 2013) used for embracing an open strategy (Baptista et al., 2017; Tavakoli et al. 2017) to understand how digitalization ideas emerge (Ross, 2018) in a bottom-up fashion. Another example is investigating the human side of strategy (Whittington, 2014), for instance by comparing the strategizing practices of digital natives and digital immigrants (Vodanovich et al., 2010).

With regards to ISS content, given the ubiquity of datafication (Galliers et al., 2017), it can be recognized as a key dimension of firm's digital strategic posture (Mithas et al., 2013). As data proliferation makes capturing and processing all data increasingly difficult, a relevant topic is balancing the data exploration and exploitation competencies (Alexander and Lyytinen, 2017). Also, the seemingly widespread assumption that digitalization, especially datafication, is

universally beneficial can be revisited by discussing the digital avenues a firm should not pursue. Examples include examining how the overreliance on datafication can become a strategic threat and the ethical and legal limits of being data offensive. To further the research on digital disruption (Weil and Woerner, 2015), researchers can extend the IS strategies of IS innovator vs. conservative vs. undefined (Chen et al., 2010) into the specific digital strategies of disruptor vs. responder vs. undefined. Considering that both the disruptor (Ansari et al., 2015) and the disrupted (Bughin and van Zeebroeck, 2017) face unique opportunities and challenges, further studies can investigate the antecedents and consequences of each strategy.

In terms of IS-business alignment, fusion of business and IT strategy (Bhardadwaj et al., 2013; El Sawy et al., 2010; Pavlou and El Sawy, 2010) results in inherent dynamism of strategy and strategic alignment, as IT does not stay still. Alignment becomes elusive, even unattainable, as there is inherent instability in any business target that depends on evolving technologies. As time passes, alignment involves a series of open cycles of adjustment of IT-enabled vision, strategy, and implementation, instead of static, closed cycles where business leaders establish stable business and IT targets. Alignment cycles can be examined and described. Re-alignment triggers (e.g., game-changing new technology functionality) and processes (i.e., alignment adjustments) can be explored. Digital alignment involves constant change and innovation (Ahuja and Chan, 2017) to the extent that it can become—and be examined as—a form of digital innovation. Where researchers once focused on IT alignment, they can now focus on strategic digital innovation. Strategic IT-enabled improvisation (Levallet and Chan, 2018) can also be explored. Finally, the examination of ISS impact is embedded in all examples discussed above. For example, how does reliance on data—e.g., being data defensive or offensive (Dallemlue and Davenport, 2017)—affect the likelihood of abnormal earnings?

It is noteworthy that, as fusion is blurring the boundary of IS and business strategies, it also alters the boundaries of cognate disciplines. While we identified only a few collaborations of IS and strategic management scholars (e.g., Drnevich and Croson, 2013), we note that strategic management researchers are increasingly interested in digitalization. A symposium in a recent *Academy of Management* meeting explored digitalization and strategy (Leiponen et al., 2016). As we write, there is a current *Academy of Management Discoveries* call for a special issue on “Digital Transformation” (Lanzolla et al., 2018), and *Long Range Planning* has a special issue on “Strategizing in a Digital World” (Volberda et al., 2018). Among the novel phenomena to be analyzed in strategic management research are the implications of digital technologies for strategy, e.g., as in platform-based competition (Durand et al., 2017). Given this mutual interest, we envision that future ISS research will witness more frequent interdisciplinary publications. In doing so, it might be interesting to ask: In what ways can we (tech-savvy ISS scholars) make the strategic management research more relevant?

Dimension 2 – Digitalization and Knowledge Product Creation: Digitalization has several implications for empirical ISS research. Data is becoming native and data collection methods are becoming embedded (Marres, 2012) in many organizational processes, generating sizeable datasets (e.g., Open Data) that can be analyzed using big data analytics (Müller et al., 2016). As such constant availability of data results in longitudinal datasets, the expectation of investigating causality increases. Accordingly, to add to the open avenues for examining alignment (Gerow et al., 2014), we suggest more research on establishing the causal structure (Markus and Rowe, 2018) of the path from alignment to firm performance. Also, new research methods such as virtual methods can substitute for “methods-as-usual” (Marres, 2012). For example, by building on the digital trace of micro-level practices (Peppard et al., 2014) generated by the IT in-use for

open strategy (Morton et al., 2018), one can use cyber-ethnography to examine digital strategizing. Finally, traditional ISS research focuses on the CIO/CEO dyadic relationships. Yet, as digitalization implies that most functions of a digital business are now involved with technologies, the respondent sampling can be revisited accordingly.

Dimension 3 – Digitalization and Knowledge Product Translation: Digitalization provides various opportunities to create knowledge products of instrumental, conceptual, and legitimative usefulness. In terms of instrumental products, we need more forecasts and benchmarks related to digital strategy. Examples of such contributions are the finding that “board members estimated that 32% of their company’s revenue would be under threat from digital disruption in the next five years” (Weil and Woerner, 2015) or that many organizations are still in a physical-world mindset, believing that their product is not subject to digital disruptions (Kane et al., 2016). Moreover, there is room for curating syntheses of ISS research on digitalization for practitioners. Also, following the global interest in digitalization topics in higher education, a credentializing scheme, e.g., to accredit digital strategy degrees or certifications, can be developed.

Dimension 4 – Digitalization and Knowledge Product Dissemination: Digitalization can contribute to the dissemination of knowledge products by revising the content and directionality of the practitioner-oriented communications that follow from scholarly papers. One can enrich traditional papers with information objects such as multivalent documents with useful and dynamic content (Mackenzie Owen, 2007). Such research objects are “semantically rich aggregations of resources that bring together the data, methods and people involved in (scientific) investigations” (Bechhofer et al., 2010). With the advent of new modes of learning motivated by online platforms, the creation of easy-to-consume digital content is a promising dissemination venue. Scholarly papers can be paired with further digital content (e.g., social

media posts, podcasts, or short MOOCs). In our survey, one responding author mentioned having created an online video about their findings. Also, the unidirectional relationship from researchers to practitioners can be revised to more dynamic research consumption communities using digital platforms. In doing so, the increasing use of alternative metrics (Sugimoto et al., 2017) can be extended to include digitally-enabled opportunities for receiving feedback (using embedded links to long-term surveys) on the reach and realized impact of research.

Implications for practitioners

The main audience of our study are researchers, yet we have offered implications for practice throughout the paper. To highlight a few, practitioners can be informed that many academics care about and strive to identify key problems they face. Also, practitioners can significantly contribute to the potential practical relevance of research by spending more time with academics (Shapiro et al., 2007), sharing their research-motivating problems (Panda and Gupta, 2014), participating in research design and joint data interpretation events (Mohrman et al., 2001), and letting researchers know when they find a knowledge product useful so that confirmatory evidence of impact can be produced.

Implications for teaching

Like many other studies of relevance (Gill and Bhattacharjee, 2009; Klein and Rowe, 2008; Starkey and Madan, 2001), our study has implications for training doctoral students. Traditionally, most IS doctoral students receive training in rigor but not in relevance. While research quality is positively associated with relevance (Baldridge et al., 2004), there is a significant need to expand doctoral training on relevance, e.g., on various dissemination activities (Gill and Bhattacharjee, 2009). IS professors can use our framework to develop a

session on relevance, for example, as part of a research methods or theory building course, recognizing that relevance is usually a key evaluation criterion of leading IS journals (Rai, 2017; Straub and Ang, 2011). Moreover, the key references our framework draws upon can be used to design the syllabus of standalone seminars on advancing the practical relevance of IS research.

Limitations and further avenues for future research on relevance

Despite its contributions, this review has limitations. First, we limited the review scope to five top-tier scholarly journals for pragmatic reasons. Caution is required before generalizing the findings to other journals as they might have differing policies on relevance and to all ISS scholarly publications as important ISS contributions also appear elsewhere (e.g., Galliers and Leidner, 2009; Kane, 2017; Newkirk et al., 2008; Queiroz, 2017; Ross, 2018; Sebastian et al., 2017). Second, our study of relevance is descriptive rather than explanatory. We observe, however, that despite long-standing calls for increasing the relevance of scholarly research (e.g., Alavi and Carlson, 1992), the state of relevance does not seem to have changed much over the past several years. While the literature speculates that this is chiefly due to the institutional logic of academia, including tenure and promotion criteria (Benbasat and Zmud, 1999; Gill and Bhattacharjee, 2009) and cross-continent research culture differences that affect journal policies (Lyytinen, 1999), further empirical examinations of this are needed. Future research can explore the antecedents or the consequences of relevance-increasing efforts—such as the micro actions we have offered to authors, reviewers, and journals above. Third, going beyond potential relevance, perceived relevance by practitioners, using a panel of a few expert judges is a good starting point (Baldrige et al., 2004), although it can include more practitioner voices. Furthermore, some of the constituting factors for each dimension of relevance in our framework have been only speculated on in the literature without empirical support. Therefore, future

studies empirically examining such relationships are needed. Finally, we complemented our paper coding and bibliometrics analysis with a survey. While we tried to do both from a positivist point of view, for example, by providing key definitions in the survey, the survey answers were subject to biases. For example, researchers believing in and providing more practical relevance were more likely to have responded to our survey. Future research can seek more objective ways of data collection, for example, by analyzing the authors' academic profiles.

Conclusion

In this paper, we examined the potential practical relevance of IS strategy research. We developed a multi-dimensional framework, emphasizing relevance in topic selection, knowledge product creation, knowledge product translation, and knowledge product dissemination. We performed a descriptive literature review (Paré et al., 2015) of 109 papers in five top-tier IS journals over the past 10 years. Using our findings, we discussed several avenues for increasing the potential practical relevance of IS strategy research.

Our study makes several contributions. First, we contribute to the practical relevance literature within and outside IS by developing a potential practical relevance of research framework that provides an overview of four key dimensions. Moving towards developing a yardstick for assessing research relevance (Bhattacharjee, 2001), our framework goes beyond the mere assessment of papers' topic fit with practitioners' interests and provides a rich view of relevance. The framework can be used as a checklist for designing or reviewing the potential practical relevance of a study by authors and reviewers. While we use it for examining the ISS literature, this framework can be applied in other disciplinary areas in order to investigate potential relevance. If used consistently, the findings across disciplines can be used for benchmarking purposes.

Second, we advance our understanding of relevance in a key IS research area, namely ISS, using a multi-method literature review. We highlight the key strengths of this area in terms of potential practical relevance and offer several opportunities for increasing relevance in ISS research projects. We show that while ISS research has been promising in terms of selecting relevant topics, other relevance dimensions such as creating relevant knowledge products and translating them for end users and disseminators can be further advanced. Moreover, by not assuming a direct readership by end users, we emphasize the need for better explicating the teaching and consulting implications of ISS studies.

While we agree that “those searching for relevance will continue to find it such an elusive objective” (Knights and Scarbrough, 2010, p. 1306), we hope that our framework stimulates efforts aimed at augmenting the potential practical relevance of our research.

Acknowledgements

We thank the Senior Editors of the special issue and the anonymous reviewers for their valuable comments and suggestions. Sincere thanks to Arman Sadreddin and David Chavez for their contributions to the development of this paper. We recognize funding by the Social Sciences and Humanities Research Council of Canada.

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